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10/553,103	11/14/2005	Jacobus Henricus Diederer	903-153 PCT/US/RCE	2411
23869 7590 12/21/2009 HOFFMANN & BARON, LLP 6900 JERICHO TURNPIKE SYOSSET, NY 11791				
EXAMINER				
LE'GESSE, HENOK D				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/553,103

**Applicant(s)**

DIEDEREN, JACOBUS HENRICUS

**Examiner**

HENOK LEGESSE

**Art Unit**

2861

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-12 and 18-22 is/are rejected.
- 7) ☒ Claim(s) 5-7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-06)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/14/2009 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 8-12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mochizuki (US 6,267,474) in view of Ito (US 6,193,354) and Hildenbrand et al (US 3,708,798).

**Regarding claim 1**, Mochizuki teaches printing device (figs.1-3) for printing a substrate with a printing medium using the "drop-on-demand" principle (inkjet recording device), comprising a print head (4,5 in figs.2,3), which is arranged in such a manner that it can be moved to and fro substantially transversely with respect to the direction in which the substrate (paper/medium) to be printed is conveyed (fig.1, col.2, lines 39-46)

and has at least one spray nozzle (inkjet recording heads 4,5 in fig.2 inherently includes nozzles) for releasing a drop of the printing medium (ink) on demand, the spray nozzle being in communication with a flexible working container (ink bag 50 in elements 20-23 in fig.2, and ink bag in element 20 in fig.3), which is arranged at a fixed position (fig.3), for degassed printing medium (ink) at a working height with respect to the spray nozzle (nozzles of head 4) which working height lies within a predetermined height range, in order to keep the pressure of the printing medium (ink) within a predetermined pressure range, wherein the working container (ink bag 50 in elements 20-23 in fig.2, and ink bag in element 20 in fig.3) is in communication with a releasable flexible reservoir (ink bag 40 in elements 12-15 in fig.2, and ink bag in element 12 in fig.3) for degassed printing medium and wherein the working container (ink bag 50 in elements 20-23 in fig.2, and ink bag in element 20 in fig.3) and the releasable flexible reservoir (ink bag 40 in elements 12-15 in fig.2, and ink bag in element 12 in fig.3) have an open connection between them during normal operation of supplying printing medium (ink) from the releasable flexible reservoir to the working container these form communicating vessels; wherein the open connection between the working container (ink bag 50 in elements 20-23 in fig.2, and ink bag in element 20 in fig.3) and the releasable flexible reservoir (ink bag 40 in elements 12-15 in fig.2, and ink bag in element 12 in fig.3) does not contain a pump (note that element 28 in figs.3,2 is electromagnetic valve not a pump). Applicant is also reminded that in the applicant's drawing fig.2 there is an on/off means 47 as the same/similar on/off means 28 is present in Mochizuki.

Mochizuki does not explicitly teach the print head is piezoelectric type print head that generates shockwave in the printing medium to form a drop of the printing medium.

However, from the same endeavor Ito teaches printing device (fig.1) that utilizes a print head (3) having a piezoelectric element (7) to generate shockwave in the printing medium to form a drop of the printing medium (col.3, lines 37-47).

Furthermore, Hildenbrand et al explicitly teaches printing device wherein the working container (12) and the releasable flexible reservoir (10) have an open connection between them such that during normal operation these form communicating vessels (see fig.2, there is no element such as valve/pump etc. added on the connection line between the two reservoirs).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the piezoelectric type print head of Ito in the printing device of Mochizuki, to provide connection between the working container and the releasable flexible reservoir of Mochizuki such that no additional element such as pump is added based on the teachings of Hildenbrand et al. The motivation being to lower manufacturing and maintenance cost of recording device by using fewer elements for instance by not including pump on the connection line between the working container and the releasable flexible reservoir of Mochizuki, and piezoelectric type print heads generates less amount of heat during printing as compared to for example thermal type print heads, thus piezoelectric type print heads can work for long period of time and in hot environments improving productivity and print quality.

**Regarding claim 2,** Ito further teaches wherein the reservoir (29 in fig.1) is positioned at a height difference above the working container (21).

**Regarding claim 3,** Ito further teaches wherein the printing device (fig.1) is provided with displacement means (23) for moving the reservoir upwards with respect to the working container (the displacement means 23 can be used for moving reservoir 21 and/or 29 in order to maintain a predetermined pressure difference).

**Regarding claim 8,** Mochizuki further teaches wherein the flexible reservoir (figs.4,5) is made from a metalized plastic film which is impervious to gas (aluminum laminated film, col.3, lines 16-25).

**Regarding claim 9,** Hildenbrand et al further teaches reservoir (10 in fig.2) that has a height dimension and the working container (12) has a height dimension, wherein the height dimension of the reservoir (10), in the completely filled state, is smaller than the height dimension of the working container (12). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the height dimension of the reservoir to be smaller than that of the working container in the printing device of Mochizuki as modified by Ito based on the teachings to Hildenbrand et al in order to control high pressure flow ink from the reservoir to the working container during printing.

**Regarding claim 10**, Mochizuki further teaches wherein the reservoir (40 in fig.4) has a front surface and a rear surface, which are connected to one another along the periphery (fig.4), an outlet opening with connecting means (41) for coupling to the working container being provided in a peripheral part (fig.4).

**Regarding claim 11**, Mochizuki further teaches wherein the peripheral part is shaped in such a manner that the inner wall of the reservoir (40 in fig.4) has a gradual transition in the direction of the outlet opening (41).

**Regarding claim 12**, Mochizuki as modified by Ito and Hildenbrand et al substantially teaches the claimed inventions, reservoir (40,50 in figs.4,5 of Mochizuki) comprising a front surface and a rear surface made from a gas-imperious, metalized plastic film, (col.3, lines 16-25 of Mochizuki) which are connected to one another along the periphery, a closable outlet opening with connecting means (41,51) for coupling to a working container being provided in a peripheral part (see figs.2-5 of Mochizuki). Further more in figures 4 and 5 of Mochizuki the ratio of the length of the front surface of the reservoir to its width is greater than one since the length is longer than the width.

Mochizuki as modified by Ito and Hildenbrand et al do not explicitly teach wherein the front surface of the reservoir has a length and a width, wherein the ratio of the length of the front surface of the reservoir to its width is greater than 2.5 (or 3).

However, it would have been an obvious matter of design choice to form the reservoir to have its length 2.5 or 3 or more times longer than its width, since such a

modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

**Regarding claim 19**, Mochizuki as modified by Ito and Hildenbrand et al above further teach wherein the open connection between the working container and the releasable flexible reservoir does not contain additional mechanical means during normal operation (see the open connection between the containers 10 and 12 of Hildenbrand et al). Mochizuki also teaches open connection between the containers 40 and 50 in figs. 2, 3 at least during ink supply from 40 to 50 there is no additional mechanical means during means.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mochizuki as modified by Ito, Hildenbrand et al and further in view of Rosenstock et al (US 4,277,791) and Hinami et al. (US 6,422,674).

**Regarding claim 4**, Mochizuki as modified by Ito and Hildenbrand et al above substantially teaches the claimed invention except for the reservoir on the support means of the displacement means (of Ito in figs. 1, 2B) can be tilted towards the working container.



However, Rosenstock et al teaches displacement means for reservoir (2 figs.1,2) arranged on support means (1) including tilting mechanism (9,8,7,5). Particularly at inclined position (8) the reservoir (2) is tilted to wards the head (3).

Similarly, Hinami et al teaches ink reservoir (350 fig.22) tilting mechanism (381) that tilts the ink reservoir (fig.22).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a tilting mechanism in the displacement means of Ito based on the teachings of Rosenstock et al and Hinami et al. The motivation being such mechanism would enable to use all the remaining ink in the reservoir to be used for printing leaving no ink the reservoir before replacing it, it also enables continues supply of ink to the head for printing uniform image, and tilting the support means requires less energy as compared to rotating it.

5. Claims 18 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mochizuki as modified by Ito, Hildenbrand et al and further in view of Yoshizawa et al. (US 7,080,899).

**Regarding claim 20**, Mochizuki as modified by Ito and Hildenbrand et al above substantially teaches the claimed invention except for the degassed printing medium has a maximum oxygen concentration of about 1 mg/l.

However, Yoshizawa et al. teaches ink (recording medium) having a maximum oxygen concentration of about 1 mg/l (col.3 lines 18-21, col. 9 lines 35-38).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize recording medium (ink) having a maximum oxygen concentration of about 1 mg/l based on the teachings of Yoshizawa et al in order to provide a recording medium having that forms less bubbles in the print head, stable printing, and to provide a high recording quality with sharp image area edges.

**Regarding claim 21**, Mochizuki as modified by Ito, Hildenbrand et al and Yoshizawa et al above teaches printing device (figs.1-3 of Mochizuki) for printing a substrate with a printing medium using the "drop-on-demand" principle, comprising a print head (4,5 in figs.2,3 of Mochizuki), which is arranged in such a manner that it can be moved to and fro substantially transversely with respect to the direction in which the substrate (paper/medium) to be printed is conveyed (fig.1, col.2, lines 39-46) and has at least one spray nozzle (inkjet recording heads 4,5 in fig.2 of Mochizuki inherently includes nozzles, see also 5a fig.1 of Ito) with an interacting piezoelectric element (7 of Ito) for generating and releasing a drop of the printing medium on demand by generating shockwaves (by 7 of Ito) in the printing medium (ink) to form said drop of the printing medium, the spray nozzle being in communication with a flexible working container (ink bag 50 in elements 20-23 in fig.2, and ink bag in element 20 in fig.3 of Mochizuki), which is arranged at a fixed position (fig.3), for degassed printing medium at a working height with respect to the spray nozzle (nozzle of head 4) which working height lies within a predetermined height range, in order to keep the pressure of the printing medium (ink) within a predetermined pressure range, wherein the working

container (ink bag 50 in elements 20-23 in fig.2, and ink bag in element 20 in fig.3 of Mochizuki) is in communication with a releasable flexible reservoir (ink bag 40 in elements 12-15 in fig.2, and ink bag in element 12 in fig.3 of Mochizuki) for degassed printing medium and wherein the working container (50) and the releasable flexible reservoir (40) have an open connection between them such that during normal operation these form communicating vessels (50 and 40 have open connection during operation for supplying ink from 50 to 40; also fig.2 of Hildenbrand et al shows open connection between reservoir 10 and working container 12, there is no element such as valve/pump etc. added on the connection line between the two reservoirs as used in the rejection of claim 1 above); wherein the degassed printing medium (ink) has a maximum oxygen concentration of about 1 mg/l (col.3 lines 18-21, col. 9 lines 35-38 of Yoshizawa et al as applied to claim 20 above).

**Regarding claim 18**, Mochizuki as modified by Ito, Hildenbrand et al and Yoshizawa et al above further teach wherein the open connection between the working container and the releasable flexible reservoir does not contain a pump (Mochizuki teaches open connection between the containers 40,50 in figs.2,3 at least during ink supply from 40 to 50; Ito similarly teaches open connection between the containers 29,21 during ink supply from 29 to 21; Hildenbrand et al teaches open connection between the containers 10 and 12 at all times).

**Regarding claim 22**, Mochizuki as modified by Ito, Hildenbrand et al and Yoshizawa et al above further teach wherein the open connection between the working container and the releasable flexible reservoir does not contain additional mechanical means during normal operation (see the open connection between the containers 10 and 12 of Hildenbrand et al). Mochizuki also teaches open connection between the containers 40 and 50 in figs.2,3 at least during ink supply from 40 to 50 there is no additional mechanical means during means.

***Allowable Subject Matter***

6. Claims 5-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

7. Applicant's arguments with respect to amended and new claims 1-12, 18-22 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's argument that the teachings of Hildenbrand can not be bodily in to Mochizuki, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references

would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to use piezoelectric type actuator in the print head of Mochizuki based on the teachings of Ito can be piezoelectric type print heads generates less amount of heat (since piezoelectric actuator does not use heat energy for actuation) during printing as compared to for example thermal type print heads (since thermal actuator uses heat energy for actuation), thus piezoelectric type print heads can work for long period of time and in hot environments improving productivity and print quality.

Applicant is also reminded that in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HENOK LEGESSE whose telephone number is (571)270-1615. The examiner can normally be reached on Mon.- Fri. Between. 8:00 AM-6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MATTHEW LUU can be reached on (571)272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MATTHEW LUU/  
Supervisory Patent Examiner, Art Unit 2861

H.L.  
December 09,2009